What is claimed is:

1. An optical imaging system for forming an image of an object on a surface, comprising on an optical axis:

(a) a first imaging system that forms an intermediate image of the object;

(b) a second imaging system that forms an image, of said intermediate image, on said surface; and

(c) a first corrective aspheric optical surface, located at or near the location of the intermediate image.

2. The optical imaging system of claim 1, further comprising a reflective surface arranged to direct light flux from the first imaging system to the second imaging system, the reflective surface comprising the first corrective aspheric optical surface.

3. The optical imaging system of claim 1, further comprising a planar reflective surface arranged to direct light flux from the first imaging system to the second imaging system, wherein the first corrective aspheric optical surface comprises a surface of a lens element.

4. The optical imaging system of claim 2, wherein the lens element is adjacent the reflective surface.

5. The optical imaging system of claim 1, further comprising a second corrective aspheric optical surface configured as a reflective surface arranged to direct light

flux from the first imaging system to the second imaging system, wherein the first corrective aspheric optical surface comprises a surface of a lens element.

6. The optical imaging system of claim 4, wherein the lens element is adjacent the reflective surface.

7. The optical system of claim 1, wherein the aspheric optical surface is symmetrical about an axis of symmetry.

8. The optical system of claim 1, wherein the aspheric optical surface is a circular or non-circular cylindrical surface.

9. A catadioptric imaging system for forming an image of an object on a surface, comprising:

(a) a first imaging system that forms an intermediate image of the object, the first imaging system comprising

(i) a concave mirror, and

(ii) at least one convex lens arranged such that light from the object propagates through the convex lens to the concave mirror and light reflected from the concave mirror propagates back through the convex lens; and

(b) a second imaging system that forms an image of the intermediate image on the surface, the second imaging system comprising one or more refractive lenses;

(c) a reflective surface arranged to guide light flux returning from the first imaging system toward the second imaging system; and

(d) a corrective aspheric optical surface, located at or near the location of the intermediate image.

10. The imaging system of claim 8, wherein the reflective surface comprises the aspheric optical surface.

11. The imaging system of claim 8, wherein the aspheric optical surface comprises a lens surface of a lens near the reflective surface.

12. The imaging system of claim 10, wherein the reflective surface is aspheric.

13. The imaging system of claim 8, wherein the image formed on the surface is reduced relative to an actual size of the object.

14. The imaging system of claim 8, comprising at most one concave mirror.

15. The imaging system of claim 8, wherein light from the object enters the first imaging system directly without intervening reflection.

16. The imaging system of claim 8, wherein the second imaging system comprises a planar mirror such that the light leaving the object and the light arriving at the surface travel in the same direction.

17. The imaging system of claim 8, wherein the second imaging system includes no non-planar mirrors.

18. The imaging system of claim 8, wherein the second imaging system comprises fused-silica lenses and fluorite lenses.

19. The imaging system of claim 8, wherein the first imaging system comprises fused-silica lenses and fluorite lenses.

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